



NEW SPECIES OF DENDROBIINAE (ORCHIDACEAE) FROM PAPUA NEW GUINEA

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ABSTRACT:

Seven species of Dendrobiinae (Orchidaceae) from Papua New Guinea, *Dendrobium vesiculosum*, *Dockrillia caudiculata*, *Dockrillia convoluta*, *Dockrillia delicata*, *Dockrillia fuliginosa*, *Dockrillia hepatica*, and *Dockrillia nothofaeti* are described as new. Seven new combinations in *Dockrillia* and one in *Grastidium* are made; *D. bowmanii*, *D. brevicauda*, *D. calamiforme*, *D. casuarinae*, *D. dolichophylla*, *D. nugentii*, *D. schoenina* and *Grastidium tozerensis*.

This is the first in a series of papers describing new species from Papua New Guinea, mostly discovered during the Schlechter-Lauterbach Commemorative Expedition organised by the Christensen Research Institute in 1989-90. This expedition was undertaken principally to recollect Orchidaceae in areas visited by Rudolf Schlechter and Karl Lauterbach between 1890 and 1908 (Clements and Ziesing 1990). Collections from these areas were the main source of material for orchids described by Schlechter in his thesis on "The Orchidaceae of German New Guinea" (Schlechter, 1911-14). The main purpose of the 1989-90 expedition was to recollect material to replace types destroyed in Berlin during the Second World War. The results of this aspect of the expedition will be the subject of another paper (Clements, in prep.). During the course of the 1989-90 expedition a number of species not accounted for by Schlechter and other workers were discovered.

Schlechter's treatment of the Dendrobiinae was revised by Brieger

(1981), who described many new genera. Whilst there has been general rejection of Brieger's work in subsequent treatments of sections of *Dendrobium sens. lat.* (Cribb 1983, Cribb 1986, Reeve and Woods 1989), the fact remains that many of the genera proposed are monophyletic, are readily defined and easily recognised. Our studies on mycorrhizal fungal associations, reproductive biology, embryology, protocorm morphology, pollination, floral morphology and vegetative habit, support the narrower interpretation of this group of orchids. This view is supported by cladistic analyses (Clements and Jones, in prep.).

In this current paper we describe seven new species of Dendrobiinae, six in *Dockrillia* Brieger and the other in *Dendrobium sens. str.*, and make seven new combinations in *Dockrillia* and another in *Grastidium* Blume.

MATERIALS AND METHODS

The description of these new species was made from a range of sources including fresh living plants, dried herbarium specimens, spirit preserved specimens stored in BANG mix (65 % ethanol, 5 % glycerol and 30%

water), floral dissection cards and 35 mm colour transparencies of flowers and plants. Specimens were examined from the following herbaria: B, BM, BRI, CANB, CBG, K, L, MEL, NSW, P, QRS, W and Z. Herbarium abbreviations follow Holmgren et al. (1990). Unless otherwise indicated, all types (or photographs thereof) and collections cited have been seen.

NEW SPECIES

Dendrobium vesiculosum M.A. Clem. et D.L. Jones, *spec. nov.*

affinis *D. leucorhodo* Schltr. a qua floribus nodo geminatis, floribus minoribus flavovirescentibus; margine petalorum et labelli non serrulato; labello linearilanceolato acuminato, et callo perreducto vesiculis minutis albis differt.

TYPE: cultivated at Australian National Botanic Gardens, Australian Capital Territory, Canberra, 2 Jul. 1990, M.A. Clements (Holotype CANB; Isotype CANB, NCBG¹). PROVENANCE: plant originally collected on the ridge above Korepo village in Waria River Valley, Morobe Province, Papua New Guinea, 500 m., 9 Apr. 1990, M.A. Clements 6631, P. Ziesing, D. Benzing, E. Dauncey, A. Kairo and O. Simeon.

Plant epiphytic with pendulous stems. **Rhizome** much abbreviated. **Pseudobulbs** 25-35 cm x 0.8-1.2 cm, more or less cylindrical, when young covered with hyaline sheaths. **Leaves** c. 8 per pseudobulb, linear-elliptical to linear-lanceolate 8-10 cm x 1.8-2.2 cm, bright green, thin-textured; base cuneate; apex acuminate and slightly recurved. **Inflorescence** lateral, bearing 2 flowers. **Peduncles** 0.7-1 cm long, sheathed with papery, hyaline bracts. **Pedicels** about 1 cm long, slender, green. **Ovary** c. 3 mm long. **Flowers** c. 2 cm across, pale greenish yellow, expanding widely, lacking any

noticeable scent. **Dorsal sepal** linear-ovate, 14-15 mm x 4.5-5 mm, erect and shallowly recurved; apex subacute. **Lateral sepals** linear-oblong, 14-15 mm x 4.5-5 mm, slightly falcate, connate at the base, widely divergent; apex subacute. **Petals** lanceolate 12-14 mm x 4-4.5 mm, widely divergent; apex subacute. **Labellum** linear-lanceolate 12-13 mm x 4.5-5 mm, thin textured, erect in proximal third then porrect; apex acute to acuminate, decurved. **Callus** linear-lanceolate, slightly thickened, yellowish green, with minute whitish vesicles in the distal half. **Column** c. 4 mm long, porrect from the end of the ovary; column foot c. 5 mm long, slightly curved. **Anther** c. 2 mm x 1.5 mm, erect, pale yellow with small projections. **Pollinia** 4, c. 1 mm long, linear-clavoid, orange, waxy. **Stigma** c. 1.2 mm long, elliptical, sunken. **Capsule** not seen.

Fig. 2 & Plate 3 & 4A.

FLOWERING PERIOD: Cultivated plants flower sporadically throughout the year. The flowers last 5-10 days and are not self pollinating.

DISTRIBUTION: Papua New Guinea, where presently known only from the Waria River Valley in the Morobe Province.

HABITAT: On trees in disturbed rainforest growing on low ridges in the valley floor.

RECOGNITION: *Dendrobium vesiculosum* is characterised by the following combination of features; pendulous pseudobulbs; two-flowered inflorescences; flowers pale greenish yellow, about 2 cm across; petals and labellum margins entire; linear-lanceolate, thin-textured labellum; and labellum callus beset with minute, whitish vesicles.

AFFINITIES: *Dendrobium vesiculosum* has some affinities with *D. leucorhodum* Schltr. but its

reduced racemes have paired flowers (1-3 in *D. leucorhodum*) which are smaller, wholly pale greenish yellow and the margins of the petals and labellum lack the minute serrulations which are characteristic of *D. leucorhodum*. The labellum of the new species is linear-lanceolate with an acute to acuminate apex whereas that of *D. leucorhodum* is orbicular with an apiculate apex.

NOTES: At first glance the labellum of this species appears to be petaloid; rather it is simple, thin-textured and with a superficial callus, the most prominent feature of which is the tiny whitish vesicles.

CONSERVATION STATUS: Only a single plant was seen but the species is probably more widespread.

ETYMOLOGY: From the latin 'vesiculosus', covered with little bladders or blisters.

Dockrillia caudiculata M.A.Clem. et D.L. Jones, spec. nov.

affinis *Dendrobio flagellae* (Schltr.) Rauschert sed floribus comparate parvis (20-25 mm latis), late aperientibus, cremeo-flavis, labello rufo-maculato et purpureo-suffuso; petalis late effusis, lineari-obovatis (12-14 mm x c. 0.8 mm), saepe ad apicem acutum flexis vel geniculatis; labelli lobis lateralibus quam lobo medio multo longioribus, lobo medio cauda prominente acuminata, differt.

TYPE: cultivated at Australian National Botanic Gardens, Australian Capital Territory, Canberra, 22 Feb. 1993, M.A. Clements (Holotype CANB; Isotype NCBG). PROVENANCE: plant originally collected at Sattleburgh near Finschhafen, Morobe Province, Papua New Guinea, 1989, N.H.S. Howcroft (M.A. Clements 7284).

[*Dendrobium* aff. *teretifolium* auct., non R. Br.; O'Byrne, Lowland Orchids Papua New Guinea 318-19, f., t. (1995)]

Pendulous epiphytic **herb** forming sparse clumps 1.5-2 m long. **Aerial roots** absent or rare. **Stems** straight, 2-15 cm x 2-3 mm, becoming yellow-brown on senescence. **Leaves** linear-terete, 10-50 cm x 3-5 mm, pendulous, dark green to grey-green. **Racemes** 10-15 cm long, wiry, arising singly from nodes at the leaf base, bearing 10-20 flowers. Pedicels 8-10 mm long, filiform. **Ovary** 1-2 mm long, hardly developed at anthesis. **Flowers** about 2.5 cm across, opening widely, creamy-yellow with red spots near the centre; labellum greenish-yellow with purplish suffusions and markings. **Dorsal sepal** narrowly oblong-elliptical, 10-14 mm x 2-2.5 mm, erect, apex acuminate. **Lateral sepals** asymmetrically oblong-lanceolate 10-14 mm x 2-2.5 mm, strongly falcate, widely divergent, apex acuminate. **Petals** narrowly linear-obovate 12-14 mm x c. 0.8 mm, widely spreading, often bent near the acute apex. **Labellum** curved in the proximal two-thirds, with mid-lobe abruptly recurved, 10-13 mm x 3-4 mm when flattened, the apex of mid-lobe often white; lateral lobes more or less oblong to oblong-elliptical, much longer than the mid-lobe, 6-7.5 mm x c. 1.8 mm, incurved; mid-lobe almost quadrate, 3.5-5 mm x 3.5-5 mm, thin-textured, the margins irregularly sinuate, and apex acuminately caudate, often curved to one side; callus of three tall narrow ridges, often dark purple, intensely and irregularly sinuate in the proximal quarter, extending to the centre of the mid-lobe. **Column** 2.5-3 mm x 2-2.5 mm, prorect from the end of the ovary, glabrous, dorsally lacerate to erose; column foot 4.5-5.5 mm x c. 1.5 mm, at about 90° to the column, shallowly channelled, glabrous. **Stigma** oblong c. 1.2 mm x 1.8 mm, deeply sunken. **Anther** c. 1.5 mm x 1.5 mm, with a short, decurved, lacerate rostrum. **Pollinia** clavate,

falcate, c. 1 mm long, orange, waxy. **Capsule** not seen. **Plate 4B & C.**

FLOWERING PERIOD: June-July and February; cultivated plants may flower sporadically. The flowers last 5-10 days and are not self pollinating.

ILLUSTRATIONS: plate 17, top LHS & page 319, O'Byrne (1995) - as *Dendrobium* aff. *teretifolium* D548.

DISTRIBUTION: Papua New Guinea, where known from localities in the Central and East New Britain Provinces (O'Byrne 1995), and Morobe Province.

HABITAT: On exposed *Casuarina* trees. Altitude: 40-c. 900 m.

RECOGNITION: *Dockrillia caudiculata* is characterised by the following combination of features; relatively small, widely opening (20-25 mm across), creamy yellow flowers with red spots and purple suffusions on the labellum; widely spreading, narrowly linear-obovate petals (12-14 mm x c. 0.8 mm), often bent or kinked near the acute apex; labellum lateral lobes much longer than the mid-lobe; and having mid-lobe short with a prominent, acuminate apical tail.

AFFINITIES: *Dockrillia caudiculata* has affinities with *D. flagella* (Schltr.) Rauschert from Papua New Guinea, but the latter species has much shorter labellum lateral lobes and an elongated mid-lobe which lacks the acuminate apiculus of *D. caudiculata*.

CONSERVATION STATUS: Relatively widespread and common.

ETYMOLOGY: From the Latin *caudicula*, possession of a little tail, in reference to the labellum apex.

SPECIMENS EXAMINED: cult., ex New Guinea, 29 Jan. 1990, M.A. Clements 5825 (CBG 9013606).

Dockrillia convoluta M.A.Clem. et D.L. Jones, *spec. nov.*

affinis *D. hepaticae* M.A.Clem. et D.L. Jones sed floribus flavescentibus manifeste maculatis et atro-rubro suffusis; labello atro-rubro marginibus fuscatis, comparate magno (ad 13 x 6 mm), apice longi-acuminato flavescenti, lobo medio ovato-elliptico marginibus incisus convolutis, et massa convolutissima porcarum callosarum flavarum, differt.

TYPE: cultivated at Australian National Botanic Gardens, Australian Capital Territory, Canberra, 29 Jul. 1996, M.A. Clements 8592 (Holotype CANB). **PROVENANCE:** plant originally collected in the Kaisipi Swamp, c. 27 km N of Waitarpi, Central Province, Papua New Guinea, 1975, P. Spence.

Pendulous epiphyte forming sparse clumps to about 1m long. **Aerial roots** absent. Stems straight, 3-8 cm x 1-2 mm, becoming yellow-brown on senescence. **Leaves** linear-terete, 10-30 cm x 3-4 mm, pendulous, dark green. **Racemes** 5-7 cm long, wiry, arising singly from nodes at the leaf base, bearing 3-7 flowers. **Pedicels** 8-12 mm long, filiform. **Ovary** 1-2 mm long, hardly developed at anthesis. **Flowers** 25-30 mm across, opening widely, yellowish, heavily spotted, striped and suffused with dark red; labellum dark red, margins darker, apex yellow. **Dorsal sepal** very narrowly ovate-lanceolate, 10-14 mm x 2.5-3 mm, obliquely erect; apex long-acuminate. **Lateral sepals** asymmetrically lanceolate, very strongly falcate, 10-14 mm x 3.5-4 mm, divergent; apex acuminate. **Petals** narrowly elliptical-lanceolate, 10-14 mm x c. 1.3 mm, spreading; apex attenuate. **Labellum** thick textured, porrect in the proximal half, distal half strongly recurved, 9-13 mm x 4-6 mm



when flattened; lateral lobes elliptic-oblong, 6-7 mm x 2 mm, incurved, outer margins papillate; mid-lobe ovate-elliptic, 5.5-6 mm x 4.5-5 mm, margins strongly incised and convolute, papillate, apex long-acuminate; callus of three yellow ridges, inner ridge narrow and straight in the distal half, outer ridges very broad (c. 0.5 mm wide), curving outwards near the base, then inwards towards the mid-lobe, becoming intensely convolute on the mid-lobe, ending nearly at the apex, 3 or 4 pairs of irregular ridges radiating to the marginal folds. **Column** yellowish with reddish markings, 2.5-3 mm x 2 mm, porrect from the end of the ovary, glabrous, the wings lacerate, extending about half way up the anther; column foot 4-4.5 mm x 2 mm, at about 10° to the column, curved, broadly channelled, glabrous. **Stigma** c. 2 mm x 1.5 mm, sunken. **Anther** 1.5 mm x 1.5 mm, brownish with purplish markings, with a lacerate rostrum. **Pollinia** oblong c. 1.2 mm long, orange, waxy. **Capsule** not seen. **Fig. 3 & Plate 5C.**

FLOWERING PERIOD: Cultivated plants flower from July to November. The flowers last 3-5 days and are not self pollinating.

DISTRIBUTION: Papua New Guinea where presently known only with certainty from the type locality.

HABITAT: Epiphytic on *Casuarina* trees in open swampland.

RECOGNITION: *Dockrillia convoluta* is characterised by the following combination of features; flowers yellowish, heavily spotted and suffused with dark red; labellum relatively large (to 13 mm x 6 mm), dark red with darker margins, papillate, with a yellowish long-acuminate apex, with prominent lateral lobes and, an ovate-elliptic mid-lobe with incised and convoluted

margins; and, an extremely convoluted mass of callus ridges on the labellum mid-lobe.

AFFINITIES: *Dockrillia convoluta* has some affinities with *D. hepatica* M.A. Clem. & D.L. Jones from Papua New Guinea, but the latter species has a much smaller labellum with an ovate-deltate mid-lobe.

CONSERVATION STATUS: Unknown.

NOTES: The flowers are fragrant in warm weather.

ETYMOLOGY: From the Latin *convolutus*, convolute irregularly coiled, in reference to the labellum mid-lobe margins and callus.

Dockrillia delicata M.A.Clem. & D.L. Jones, sp. nov.

affinis *Dendrobii bowmanii* Benth. sed racemis 2-6 cm longis floribus 5-8; floribus parvis (c. 15 mm latis) cremeis vel albis; sepalo dorsali ad 7 x 3 mm; sepalis lateralibus ad 9 x 3.5 mm; petalis ad 9 x 1.5 mm; labello ad 12 x 4.5 mm; et labelli callo prominente ex porcis 5 altis irregulariter sinuatis in lobo medio, 3 ad apicem extensis, constante, differt.

TYPE: cultivated at Australian National Botanic Gardens, Australian Capital Territory, Canberra, 2 Feb. 1994, M.A. Clements 7280 (Holotype CANB; Isotype CANB, NCBG). **PROVENANCE:** plant originally collected on Hoop Pine near Bulolo, Morobe Province, Papua New Guinea, 1989, N.H.S. Howcroft.

Pendulous epiphyte forming sparse clumps to about 1m long. Aerial roots absent. Stems straight, 2-8 cm x 1-1.5 mm, becoming yellow-brown on senescence. **Leaves** linear-terete, 2-10 cm x 3-4 mm, erect to pendulous, dark green. **Racemes** 2-6 cm long, wiry, arising singly from nodes at the leaf base, bearing 5-8 flowers. **Pedicels** 12-15 mm long, filiform. **Ovary** 1-2 mm long, hardly developed at anthesis. **Flowers**

about 15 mm across, not opening widely, fragrant, cream to white with some faint reddish markings towards the centre. **Dorsal sepal** oblong, 6-7 mm x c. 3 mm, erect to obliquely-erect, subobtusate. **Lateral sepals** asymmetrically oblong-obovate, widely divergent; apex subacute. **Petals** very narrowly obovate, porrect to obliquely-erect; apex subacute. **Labellum** curved in proximal two-thirds, with mid-lobe spreading nearly at right angles, 10-12 mm x 4-4.5 mm when flattened, cream with minute red dots and irregular lines towards the margins; lateral lobes more or less elliptic, 7-8 mm x c. 1.3 mm, incurved; mid-lobe ovate-elliptic, 3.5-4 mm x 4-4.5 mm, thin-textured, with margins strongly sinuate-crispate, and apex broadly obtuse to emarginate; callus of five tall narrow ridges, becoming sinuate on the mid-lobe, the central three ridges extending to the labellum apex. **Column** 3-3.5 mm x c. 2 mm, porrect from the end of the ovary, glabrous; column foot 4.5-5.5 mm x c. 1 mm, at about 120° to the column, shallowly channelled, glabrous. **Stigma** oblong, c. 3 mm x 1.5 mm, deeply sunken. **Anther** c. 1 mm x 1 mm, with a short, decurved, lacerate rostrum. Pollinia clavate, falcate 0.8-0.9 mm long, orange, waxy. **Capsule** not seen. **Fig. 4 & Plate 5A & 5B.**

FLOWERING PERIOD: Cultivated plants flower mostly in February and March. The flowers last 3-5 days and are not self pollinating.

DISTRIBUTION: Papua New Guinea, Morobe Province.

HABITAT: Epiphytic on *Araucaria cunninghamii*. Altitude: 900-2000 m.

RECOGNITION: *Dockrillia delicata* is characterised by the following combination of features; relatively small, erect to pendulous leaves (2-10 cm x 3-4 mm); small

(c. 15 mm across) cream to white, widely opening flowers in 5-8-flowered racemes 2-6 cm long; small tepals (dorsal sepal to 7 x 3 mm; lateral sepals to 9 x 3.5 mm; petals to 9 x 1.5 mm; labellum to 12 x 4.5 mm); and strongly developed labellum callus of five tall ridges, these irregularly sinuate on the mid-lobe, three extending to the labellum apex.

AFFINITIES: *Dockrillia delicata* has close affinities with *Dendrobium bowmanii* Benth. from eastern Australia, both having similar growth habit, leaves and flowers. *D. bowmanii* has larger flowers, borne singly or in pairs, green to yellow, finely striped tepals and the labellum callus has three keels.

CONSERVATION STATUS: Unknown as the species is not well recorded.

ETYMOLOGY: From the Latin *delicatus*, delicate, in reference to the delicate growth habit and flowers.

Dockrillia fuliginosa M.A.Clem. et D.L. Jones, *spec. nov.*

affinis *Dendrobio brevicauda* D.L. Jones & M.A. Clem. a qua planta minor; floribus coracinis usque atris, sepalis oblongiellipticis; petalis perlatioribus oblongiellipticis, labello base per 90° flexo, labello lobis lateralibus perreductis er lobo mediano persaucto er cristis calli tenuibus sinuatis, differt.

TYPE: cultivated at Sydney, 23 Sep. 1995, M.A. Clements 8540 (Holotype CANB; Isotype CANB, NCBG). **PROVENANCE:** plant originally collected at the Kaisipi swamp c. 27 km N of Waitarpi, Central Province, Papua New Guinea, 1975, P. Spence.

Pendulous epiphytic **herb** forming sparse clumps to about 50 cm long. **Aerial roots** absent. **Stems** straight, 3-10 cm x 1-2 mm,



becoming yellow-brown on senescence. **Leaves** linear-terete, 10-20 cm x 3-4 mm, pendulous, dark green. **Racemes** 3-5 cm long, wiry, arising singly from nodes at the leaf base, bearing 3-6 flowers. **Pedicels** 5-8 mm long, filiform. **Ovary** 1-2 mm long, hardly developed at anthesis. **Flowers** about 2 cm across, not opening widely, with a musty fragrance, dark purplish-black to sooty black, with some faint light mottling towards the ends of the tepals. **Dorsal sepal** linear oblong-elliptic, 18-20 mm x 4.5-5.5 mm, narrowed to the base, obliquely erect; margins incurved distally. **Lateral sepals** asymmetrically linear-oblong, 17-19 mm x 4.5-5.5 mm, falcate, divergent, margins incurved distally; apex subacute. **Petals** broadly elliptical-oblong, 18-20 mm x 6-7 mm, incurved over the column and labellum; margins slightly irregular; apex subacute. **Labellum** with a strong right-angled bend near the base, bringing the lateral lobes into close proximity with the column, then porrect, 15-17 mm x 6-7 mm when flattened; lateral lobes more or less semicircular, 3-4 mm x c. 1.5 mm, incurved; mid-lobe elliptic, 12-13 mm x 6-7 mm, thin-textured, with margins strongly sinuate, and apex subacute to subacuminate; callus of three narrow ridges, irregularly sinuate in the distal half, extending as faint lines nearly to the apex. **Column** 1.5-2.5 mm x 1.5-1.8 mm, porrect from the end of the ovary, glabrous; column foot 4-5 mm x c. 1 mm, at about 90° to the column, shallowly channelled, glabrous. **Stigma** c. 1.8 mm x 1.5 mm, deeply sunken. **Anther** c. 2 mm x 2 mm, with a short, decurved, lacerate rostrum. **Pollinia** clavate, falcate, c. 1 mm long, orange, waxy. **Capsule** not seen. **Fig. 5 & Plate 6A.**

FLOWERING PERIOD: Cultivated plants

flower mostly in spring. The flowers last 5-10 days and are not self pollinating.

DISTRIBUTION: Papua New Guinea where presently known only with certainty from the type locality.

HABITAT: Epiphytic on *Casuarina* trees on the margins of, and in, open swampland.

RECOGNITION: *Dockrillia fuliginosa* is characterised by the following combination of features; flowers not opening widely, with a musty fragrance, dark purplish-black to sooty black, with some faint light mottling towards the ends of the tepals; broad (to 7 mm wide) perianth segments; labellum with a strong right-angle bend near the base; labellum lateral lobes very short (to 4 mm long), more or less semicircular; and, mid-lobe elliptic, (to 13 x 7 mm), with strongly sinuate margins.

AFFINITIES: *Dockrillia fuliginosa* is a very distinctive species with no obvious affinities to any other species of *Dockrillia*.

NOTES: This striking species has been known under the cultivar name of *Dendrobium* 'Black Pam' for many years in Australia. In Sydney it is easily cultivated and flowers well if maintained in a shadehouse.

CONSERVATION STATUS: Possibly restricted to the Kaisipi Swamp area but the species is not well recorded and probably more widespread.

ETYMOLOGY: From the Latin *fuliginosus* dirty brown to almost black or sooty, in reference to the colour of the flowers.

Dockrillia hepatica M.A.Clem. et D.L. Jones, *spec. nov.*

affinis *D. flagellae* (Schltr.) Rauschert sed floribus c. 2 cm latis, virido-cremeis valde

maculatis et atro-rufis suffusis; petalis anguste elliptico-lanceolatis, attenuatis; labello comparate parvo (ad 10 x 4 mm), atro-rufo, papillato, lobis lateralibus prominentibus, lobo medio anguste ovato-triangulari, differt.

TYPE: cultivated at Australian National Botanic Gardens, Australian Capital Territory, Canberra, 20 Aug. 1994, M.A. Clements (Holotype CANB). **PROVENANCE:** plant originally collected at the Upper Watut River, 13 km SSW of Bulolo, Morobe Province, Papua New Guinea, 22 Aug. 1982, E.M. Canning 5182.

Pendulous epiphyte forming sparse clumps to about 1m long. **Aerial roots** absent. Stems straight, 3-7 cm x 1-2 mm, becoming yellow-brown on senescence. **Leaves** linear-terete, 10-20 cm x 5-6 mm, pendulous, dark green. **Racemes** 2-4 cm long, wiry, arising singly from nodes at the leaf base, bearing 3-5 flowers. **Pedicels** 4-7 mm long, filiform. **Ovary** 1-2 mm long, hardly developed at anthesis. **Flowers** about 2 cm across, opening widely, greenish cream heavily spotted and suffused with dark red; labellum dark red with a blackish red apex. **Dorsal sepal** very narrowly ovate-lanceolate, 12-14 mm x 2.3-2.5 mm, erect to recurved; apex long-acuminate. **Lateral sepals** asymmetrically lanceolate, very strongly falcate, 12-14 mm x 3.5-4.5 mm, divergent; apex obtusely acuminate. **Petals** narrowly elliptical-lanceolate, 11-12 mm x c. 1.5 mm, porrect to incurved over the column and labellum; apex attenuate. **Labellum** thin textured, porrect in the proximal four-fifths, with apex recurved at right angles or more, 8.5-10 mm x 3.5-4 mm when flattened; lateral lobes more or less oblong, 5-6 mm x 1.5 mm, incurved, with outer margins papillate; mid-lobe narrowly ovate-deltate,

3.5-4 mm x 2-2.5 mm, thin-textured, with margins strongly convolute, and apex subacuminate; callus of three narrow, very tall ridges, c. 0.5 mm high, becoming sinuate on the mid-lobe, ending half to three quarters the distance to the apex. **Column** 1.5-2.5 mm x 1.5-1.8 mm, porrect from the end of the ovary, glabrous; column foot 4-5 mm x c. 1 mm, at about 10° to the column, shallowly channelled, glabrous. **Stigma** c. 1.8 mm x 1.5 mm, deeply sunken. **Anther** 1 mm x 1 mm, with a lacerate rostrum. **Pollinia** oblong c. 0.9 mm long, orange, waxy. **Capsule** not seen. **Plate 6B & C.**

FLOWERING PERIOD: Cultivated plants flower in spring. The flowers last 3-5 days and are not self pollinating.

DISTRIBUTION: Papua New Guinea; Morobe Province, where known with certainty only from the type locality.

HABITAT: Epiphyte on trees along ridges in forests dominated by *Castanopsis* and *Ternstroemia*.

RECOGNITION: *Dockrillia hepatica* is characterised by the following combination of features; flowers about 2 cm across, greenish cream heavily spotted and suffused with dark red; petals narrowly elliptical-lanceolate with an attenuate apex; labellum relatively small (to 10 x 4 mm), dark red, papillate, with a blackish red apex, with prominent lateral lobes and, a narrow, ovate-deltate mid-lobe.

AFFINITIES: *Dockrillia hepatica* has some affinities with *D. flagella* (Schltr.) Rauschert from Papua New Guinea, but the latter species has cream flowers, the petals lack an attenuate apex and the labellum is larger with prominently elliptic lateral lobes.

CONSERVATION STATUS: Unknown.



ETYMOLOGY: From the Latin *hepaticus*, liver coloured, in reference to the colour of the flowers.

Dockrillia nothofageti M.A.Clem. et D.L. Jones, spec. nov.

affinis *D. flagellae* (Schltr.) Rauschert sed floribus magnis (35 mm latis), cremeo-albis, tepalis subtiliter striatis; labelli lobis lateralibus dente apicali anguste lineari, lobo medio ovato-elliptico porcis 3 callosis ad apicem extendentibus; et columnae alis angustis acuminatis antheram excedentibus, differt.

TYPE: Papua New Guinea; Western Highlands Province, 24 miles (38.4 km) from Wabag, Wabag-Laiagam road, 5°25'S, 143° 25'E, alt. 9000 ft. (c. 2500 m), 20 July 1962, J.S. Womersley NGF 15210 (Holotype CANB 113530).

Pendulous epiphytic **herb** forming clumps to about 1m long. **Aerial roots** absent. **Stems** straight, 2-8 cm x 1-2 mm, becoming yellow-brown on senescence. **Leaves** linear-terete, 10-20 cm x 3-4 mm, pendulous, dark green. **Racemes** 1-4.5 cm long, moderately stout, arising singly from nodes at the leaf base, bearing 3-12 flowers. **Pedicels** 9-10 mm long, filiform. **Ovary** 1-2 mm long, hardly developed at anthesis. **Flowers** about 3.5 cm across, opening widely, creamish-white with fine dark striae. **Dorsal sepal** linear-oblong, 12-15 mm x c. 3 mm, obliquely erect. **Lateral sepals** asymmetrically linear-oblong 17-21 mm x 3.5-4 mm, straight, divergent; apex obtuse. **Petals** narrowly oblong-obovate 15-17 mm x c. 2 mm, obliquely erect; apex subacute to obtuse. **Labellum** porrect in proximal two thirds, with mid-lobe spreading to recurved, 11.5-12.5 mm x c. 3-3.5 mm when flattened; lateral lobes more or less oblong, c. 8 mm x c. 1.5 mm, incurved, ending in a

narrow, tooth-like lobe; mid-lobe elliptic to ovate, c. 4 mm x c. 3 mm, thin-textured, with margins strongly sinuate, and apex obtuse; callus of three narrow ridges, irregularly convolute-sinuate on the mid-lobe, extending to the labellum apex. **Column** c. 3.5 mm x c. 2 mm, porrect from the end of the ovary, glabrous, with narrow wings extending higher than the anther; column foot c. 4.5 mm x c. 1 mm, at about 140° to the column, shallowly channelled, glabrous. **Stigma** c. 1.5 mm long, deeply sunken. **Anther** c. 1.5 mm x 1.5 mm, with a deflexed rostrum. **Pollinia** not seen. **Capsule** not seen.

Fig. 6.

FLOWERING PERIOD: July.

DISTRIBUTION: Papua New Guinea; Western Highlands Province, where known with certainty only from the type locality.

HABITAT: On lower side of branches of *Nothofagus carri* Steenis. Altitude: c. 2800 m.

RECOGNITION: *Dockrillia nothofageti* is characterised by the following combination of features; large (35 mm across), creamy-white flowers with tepaline striae; labellum lateral lobes ending in narrow linear teeth; an ovate-elliptical mid-lobe with the three callus ridges extending to the labellum apex; and column with narrow acuminate wings extending above the anther.

AFFINITIES: *Dockrillia nothofageti* is a very distinctive species with no obvious affinities to any other *Dockrillia* known to us.

CONSERVATION STATUS: Unknown.

ETYMOLOGY: Specific epithet refers to the habit of the growing on *Nothofagus*.

NEW COMBINATIONS

In recognising certain genera in the Dendrobiinae Lindl. distinct from *Dendrobium* sens. str., as proposed by Brieger (1981), the following new combinations are necessary.

Dockrillia Brieg. in Schltr., Die Orchideen 3(1): 745 (1981). Type species: *Dendrobium linguiforme* Sw. (fide Brieger)

Dockrillia bowmanii (Benth.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium bowmanii* Benth., Fl. Austral. 6: 286 (1873). Types: 'Bersaker range and Port Cooper', Bowman s.n. (Lectotype K!; Isolectotype MEL! W!, fide Clements 1989).

Dendrobium striolatum Rchb.f. var. *chalandei* Finet, Bull. Soc. Fr. 50: 380 (1903); *Dendrobium chalandei* (Finet) Kraenzl., Pflanzenreich Orch.-Mon.-Dendr. 1: 299 (1910). Type: New Caledonia, 12 Sep. 1884, Chalande s.n. (Holotype P!).

[*Dendrobium mortii* auct., non F. Muell; Dockr., Austral. Indig. Orchids 1: 360, t. (1969)]

Distribution: Australia; Queensland and New South Wales, and New Caledonia.

Dockrillia brevicauda (D.L. Jones et M.A. Clem.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium brevicaudum* D.L. Jones et M. Clements, Novon 4(2): 109-111, f. 1 (1994). Type: 'Australia. Queensland: Cook District, Mt. Finnigan, S of Cooktown', 31 Mar. 1993, C.H. Broers 422 & L. Roberts (Holotype CBG!; Isotype CBG!, BRI!).

Distribution: Australia; Queensland.

Dockrillia calamiforme (Lodd.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium calamiforme* Lodd. in Edwards's, Bot. Reg. 27: Misc. 9, no. 26 (1841). Type: cult. ex New Holland, Loddiges s.n. (Lectotype K-L!, fide Clements 1989).

Dendrobium baseyanum St. Cloud, North Queensland Naturalist 23(110): 1-2, f. (1955); *Dockrillia baseyana* (St. Cloud) Rauschert, Feddes Repert. 94(7-8): 446 (1983). Type: 'Kings Plains, North

Queensland', FL Basey s.n. (Holotype QRS?, lost).

Dendrobium teretifolium R. Br. var. *fasciculatum* Rupp, Proc. Linn. Soc. New South Wales 60: 157, t. 4 (1935). Type: North Queensland, Cairns?, Aug. 1934, Tierney & H. Flecker s.n. (Holotype NSW!).

Dendrobium teretifolium R. Br. var. *album* C. White, Proc. Roy. Soc. Queensland 47: 82 (1936). Type: cult., 6 Oct. 1933, B.D. Grimes ex Mount Spec, North Queensland, B.D. Grimes s.n. (Holotype BRI!).

Distribution: Australia; Queensland.

Dockrillia casuarinae (Schltr.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium casuarinae* Schltr., Repert. Spec. Nov. Regni Veg. 15: 211 (1918). Type: New Caledonia, Yaouhe, 100 m, 29 Sept. 1902, R. Schlechter 14728 (Holotype B†; Isotypes BM!, P!, Z!).

Synonym: *Dendrobium daenikerianum* Kraenzl., Veitr. Nat. Ges. Zurich 74: 82 (1929). Type: New Caledonia, Mt Koghis, 19 July 1925, A.E. Däniker 1858 (Holotype Z!).

[*Dendrobium sylvanum* auct., non Rchb.f.; N. Hallé, Fl. Nouv. Caled. Depend., Orchid. 8: 142 (1977)]

Distribution: New Caledonia.

Dockrillia dolichophylla (D.L. Jones et M.A. Clem.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium dolichophyllum* D.L. Jones et M.A. Clem., Aust. Orch. Res. 1: 52 (1989). Type: 'O'Reilly's property, Green Mountains, Queensland', 9 Sep. 1987, C.W. Harman s.n. (Holotype CBG!; Isotype BRI!).

Synonym: *Dendrobium teretifolium* R. Br. var. *aureum* F.M. Bailey, Queensl. fl. 5: 1534 (1902); *Dendrobium teretifolium* R. Br. var. *fairfaxii* Fitzg. ex F. Muell. forma *aureum* (F.M. Bailey) Clesmesha, Orchadian 2: 11 (1965). Type:



cult. Balmain, Oct. 1888 ex 'Richmond River', J. Geary s.n. (Lectotype BRI!).

Distribution: Australia; Queensland and New South Wales.

Dockrillia nugentii (F.M. Bailey) M.A. Clem. et D.L. Jones, *comb. nov.*

Basionym: *Dendrobium linguiforme* Smith var. *nugentii* F.M. Bailey, *Queensl. fl.* 6: 1533 (1902); *Dendrobium nugentii* (F.M. Bailey) D.L. Jones et M.A. Clem., *Aust. Orch. Res.* 1: 58 (1989). Type: 'Eungella Range', Aug-Sep. 1894, L.J. Nugent s.n. (Holotype BRI!; Isotype K!).

Distribution: Australia; Queensland.

Dockrillia schoenina (Lindl.) M.A. Clem. et D.L. Jones, *comb. nov.*

Basionym: *Dendrobium schoeninum* Lindl., *Gard. Chron.* 7 (1846). Type: cultivated ex 'New Holland', Loddiges 390 (Holotype K-L!; Isotype W!).

Dendrobium beckleri F. Muell., *Fragm.* 7: 59 (1869); *Dendrobium striolatum* Reichb.f. var. *beckleri* (F. Muell.) F.M. Bailey, *Syn. Queensl. fl. Suppl.* 1: 55 (1886); *Callista beckleri* (F. Muell.) Kuntze, *Revis. gen. pl.* 2: 654 (1891); *Dockrillia beckleri* (F. Muell.) Rauschert, *Feddes Repert.* 94(7-8): 446 (1983). Types: 'Ad flumen Clarence River', H. Beckler s.n. (Lectotype MEL!, *fide* Clements 1989).

Distribution: Australia; Queensland and New South Wales.

Grastidium Blume, *Bijdr.* 7: 333 (1825). Type species: *Grastidium salaccense* Blume.

Grastidium tozerensis (Lavarack) M.A. Clem. et D.L. Jones, *comb. nov.*

Basionym: *Dendrobium tozerensis* Lavarack, *Austrobaileya* 1: 70, f. 5 (1977). Type: 'Tozer's Gap, Cape York Peninsula', 11 Aug.

1975, P.S. Lavarack 990 (Holotype & Isotype BRI!).

Distribution: Australia; Queensland.

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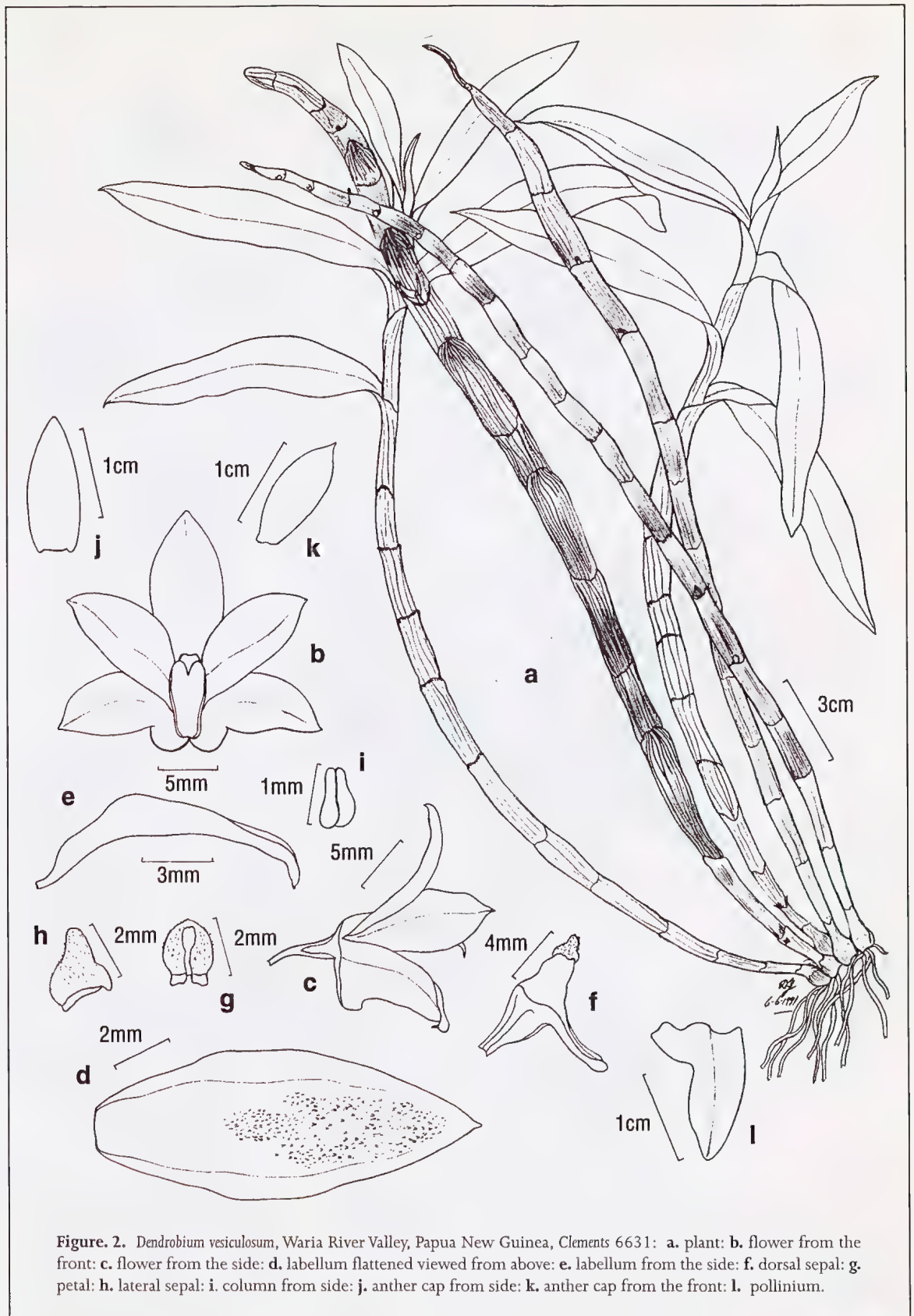


Figure 2. *Dendrobium vesiculosum*, Waria River Valley, Papua New Guinea, Clements 6631: **a.** plant: **b.** flower from the front: **c.** flower from the side: **d.** labellum flattened viewed from above: **e.** labellum from the side: **f.** dorsal sepal: **g.** petal: **h.** lateral sepal: **i.** column from side: **j.** anther cap from side: **k.** anther cap from the front: **l.** pollinium.

Figure 3. *Dockrillia convoluta*, Papua New Guinea; Central Province, Clements 8592: a. flattened labellum.

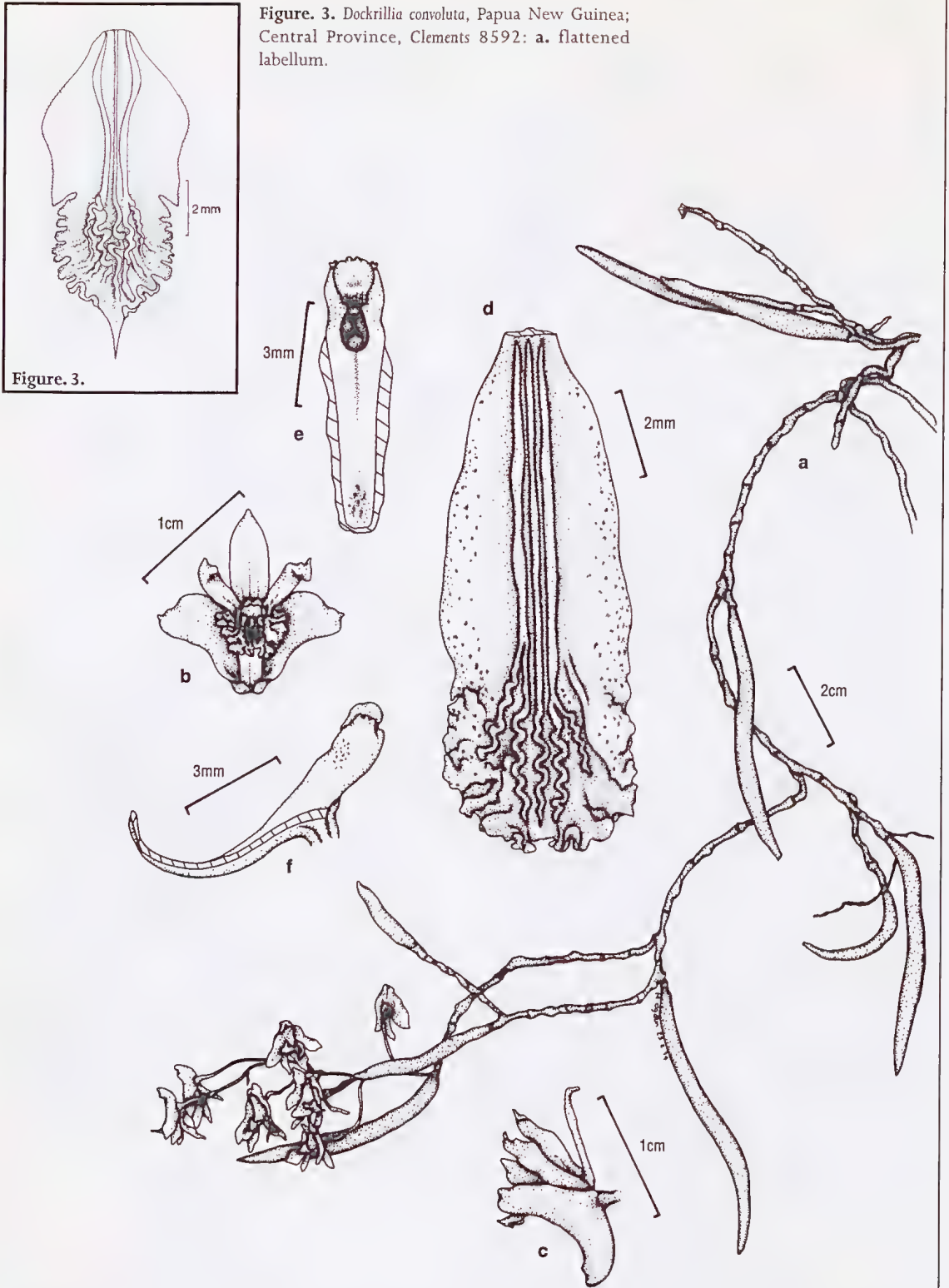


Figure 4. *Dockrillia delicata*, Papua New Guinea; Morobe Province, Clements 7280: a. plant: b. flower from front: c. flower from side: d. labellum flattened: e. column from front: f. column from side.

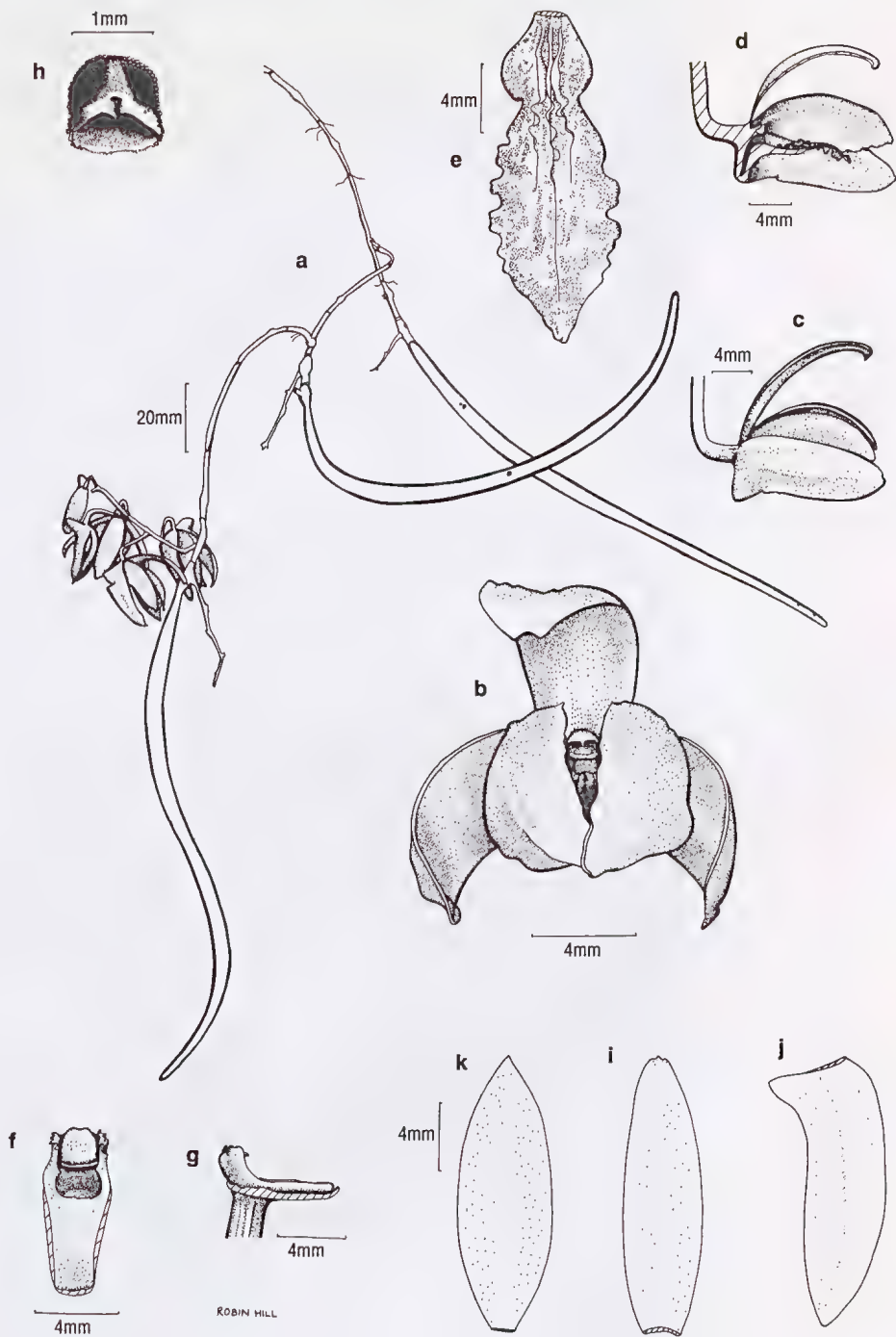


Figure 5. *Dockrillia fuliginosa*, Kaisipi Swamp, Papua New Guinea, Clements 8540: **a.** part of a plant: **b.** flower from the front: **c.** flowers from the side: **d.** median section through flower: **e.** flattened labellum: **f.** dorsal sepal: **g.** lateral sepal: **h.** petal: **i.** column from the front: **j.** column from the side: **k.** anther cap from the front.

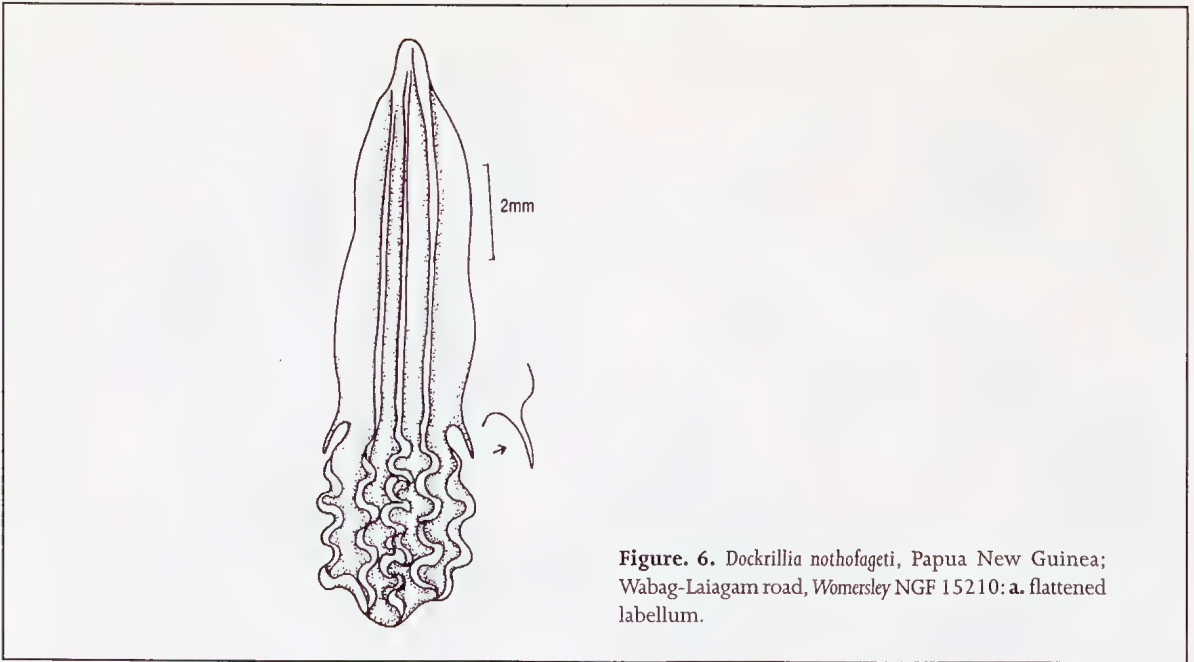


Figure 6. *Dockrillia nothofageti*, Papua New Guinea; Wabag-Laiagam road, Womersley NGF 15210; a. flattened labellum.

Plate 3. *Dendrobium vesiculosum*, Clements 6631





Plate 4A.

Dendrobium vesiculosum, Clements 6631



Plate 4B.

Dockrillia caudiculata, Clements 7284



Plate 4C.

Dockrillia caudiculata, Clements 5825



Plate 5A. *Dockrillia delicata*, Clements 7280



Plate 5B. *Dockrillia delicata*, Clements 7280



Plate 5C. *Dockrillia convoluta*, Clements 8592





Plate 6A.

Dockrillia fuliginosa, Clements 8540



Plate 6B. *Dockrillia hepatica*, Canning 5182



Plate 6C. *Dockrillia hepatica*, Canning 5182

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